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Change Trend of Public Environmental Awareness in Shanghai (2007 to 2011)

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Abstract

In-depth and comprehensive survey and research on the public environmental awareness in Shanghai has been gradually carried out in recent years. However, there is lack of dynamic analysis of the time sequence. Therefore, the paper carried out survey of the public environmental awareness in Shanghai between 2007 and 2011 to learn about the trend of the public environmental awareness in Shanghai in recent 5 years in time. The conclusion show: the public environmental awareness of Shanghai took on a slightly rising tendency between 2007 and 2011, the public in Shanghai can sense the changes in the environmental conditions in Shanghai in the past 5 years, the proportion of the information obtained from newspapers and magazines has decreased, while that of the information on environmental protection from internet has obviously risen.

Keywords: Environmental Awareness; Environmental Protection; Shanghai; Public

1. Preface

As put forth in the outline of the“12th Five-Year Planning” of Shanghai, Shanghai shall be built into a modern international metropolis featuring economic prosperity, social harmony and beautiful environment by 2020 [1], Therefore, it is necessary to facilitate resources conservation and environmental protection. “The Rio Declaration on Environment and Development” put forth that it is desirable to solve

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environmental problems with the participation by all the relevant public. Thus public participation shall be positively encouraged to improve the public environmental awareness [2]

In-depth and comprehensive survey and research on the public environmental awareness in Shanghai has been gradually carried out in recent years. However, there is lack of dynamic analysis of the time sequence. Therefore, the paper carried out survey of the public environmental awareness in Shanghai between 2007 and 2011 to learn about the trend of the public environmental awareness in Shanghai in recent 5 years in time, grasp the key points and direction of public and educational work on environmental protection, and promote realization of the strategic objectives for ecological urban construction in Shanghai.

2. Research Methods

Through referring to the existing research and select and compile questionnaire through expert assessment, Small sample survey was carried out in June 2007, and valid questionnaire was formed through reliability and validity tests. Every May to July from 2007 to 2011 was the time for releasing questionnaire, and random sampling was adopted for the survey for the urban citizens in Shanghai. Totally 5,117 copies of questionnaire were distributed then, with the number of valid questionnaire and recycle rate being 4,645 and 90.78% respectively. See Table 1 for information on the survey samples. The survey data were analyzed by means of SPSS.

Table 1 Basic Information on the Survey Samples

Year	Number of People	Residing Area (%)		Sex (%)		Monthly Family Income Per Capita (Unit: RMB 1,000 Yuan) (%)				
		Urban Center	Suburb	Male	Female	≤1	1-3	3-5	5-8	>8
2007	381	27.28	72.72	52.75	47.25	37.01	44.09	14.44	2.10	2.36
2008	2815	33.53	66.47	46.86	53.14	17.65	45.52	22.66	8.56	5.61
2009	420	53.57	46.43	48.21	51.79	16.07	36.61	28.57	12.50	6.25
2010	462	55.84	44.16	39.26	60.74	10.17	36.80	27.92	17.32	7.79
2011	567	55.37	44.63	36.94	63.06	4.15	36.27	32.64	17.10	9.84

3. Analysis of the Changes in Public Environmental Awareness

3.1. Changes in Awareness of Environmental Protection

As shown in the survey, over 85% of the citizens held that the summer air temperature had risen to various extents between 2007 and 2011. The meteorological data have shown that the average summer air temperature (July to September) in Shanghai has decreased from 28.5℃ in 2005 to 27.8℃ in 2009. And the extreme maximum air temperature has shown a curvy rising tendency, and the extreme minimum air temperature has taken on a zigzag decreasing tendency. Thus the citizens have sharp senses about the changes in summer air temperature in recent years, and hold that senses about the rise in summer air temperature mostly come from the changes in extreme air temperatures. Thus the release of information on climatic changes in Shanghai shall be strengthened in the future, while the meteorological knowledge shall be popularized to enable the public to obtain sufficient and accurate understanding about the climatic changes in Shanghai.

The proportion of the public that believe the environmental condition of Shanghai has turned to the better in the past years has risen by 11.43%. The statistical data has shown that from 2000 to 2009, the urban green land area of Shanghai has increased 104328 hectares with the forestation coverage rate rising by 15.90% [3]. In contrast, the public of Shanghai can fully experience the changes in the environmental conditions in Shanghai in recent years, and their confidence in the environmental conditions mostly comes from the improvement of the urban environment. Therefore, constant strengthening comprehensive control and regulation of the urban environment will continuously enhance the public confidence in environmental conditions.

3.2. Analysis of Environmental Protection Behaviors

As shown in the survey results, the proportion of the public who are shy to dissuade rubbish littering showed the greatest changes between 2007 and 2011, rising from 67.45% in 2007 to 80.30% in 2010, and slightly decreasing to 68.29% in 2011. As for ban on throwaway chopsticks and convenience lunch box, over 50% of the public noted that they would positively cooperate thereto, and over 34% of the public adopted an indifferent negative attitude, which shows half of the public are willing to participate in environmental protection themselves. In addition, nearly 40% of the public showed indifferent attitude toward environmental destruction with low initiative to participate in environmental protection. Thus future education on environmental protection shall be focused on them. TV and radio ranked the first among the ways selected to learn about environmental conditions by the public between 2007 and 2011, with the selection rate decreasing by 5.91%. Newspapers and magazines, and internet ranked the 2nd and 3rd respectively between 2007 and 2009, and the internet, newspaper and magazines ranked the 2nd and the 3rd between 2010 and 2011. In addition, the selection rate of internet rose by 8.02%. The selection rate of newspapers and magazines has decreased by 4.80%. As shown in the statistical data [3], the total issue volume of the newspapers in Shanghai in recent 5 years has taken on a falling tendency, while the number of the mobile phones, color TV sets, and domestic computers per 100 households in Shanghai has gradually risen, showing the changes in public accesses to information and decrease in the information volume the public receives from newspapers and magazines. The proportion of the information the public receive from the internet has obviously risen, and internet will be an important way for release of environmental protection information in the years to come.

3.3. Analysis of Satisfaction toward Environmental Protection

Satisfaction toward environmental protection is measured by the public satisfaction toward local environmental conditions and environmental protection behaviors. The public in Shanghai thought the most serious pollution was air pollution between 2007 and 2011, with the selection rate thereof taking on a zigzagging rising tendency. It shall be noted that residents in different areas thought the certain changes had taken place to the first three ranks of the most serious pollutions between 2007 and 2011(the residents in the central areas: air pollution>solid waste pollution >Water pollution, and the residents in suburb: water pollution>air pollution > solid waste pollution) which shows that the residents in urban centers think air pollution and solid waste pollution are rather serious, while those in suburb think water pollution and air pollution are serious.

Monitoring data [3-4] have shown that the excellence rate of environmental air quality of Shanghai in recent years has taken on a general rising tendency in recent years. However, the pollution by acid rain has shown a rising tendency annually, with slight decrease only between 2009 and 2010, therefore future improvement of the environmental air quality in Shanghai shall focus on that. And such is somehow different from the feelings of the residents in central areas toward air pollution in recent 5 years. As for

water pollution, according to "Environmental Quality Standards for Surface Water"(GB3838-2002), the proportion of the core rivers with water quality above category III among the 7,198,000 meters of rivers assessed in Shanghai rose by 11% and that of rivers of inferior quality (category V) decreased by 11.50%, which shows that the general water environmental quality of the whole city has improved to a certain extent [5]. The comprehensive pollution indexes for the sectional water quality selected for assessment in the urban center and suburb took on a falling tendency between 2004 and 2010, which shows the water environmental quality of the two areas has improved, and the general water quality of the suburb river courses is always superior to that of the urban centers. Such is different from the feelings of the suburb residents toward water pollution in recent 5 years to a certain extent. Thus there are obvious differences in the feelings toward air pollution and water pollution between the residents in the urban centers and those in suburbs, and further research shall be carried out to find out the reasons. Such has posed greater challenges to the publicity work on environmental regulation and control by the government in the future.

Generally, the proportion of the public who thought the surrounding people had moderate awareness of environmental awareness took on a rising tendency between 2007 and 2011, the proportion of the public in the suburb who think the surrounding people have strong awareness of environmental protection has rising by 17.77% and the public in central areas has rising by 8.85%. Thus the recognition level for the awareness of environmental protection of the public in the suburbs is always higher than that of the public in urban centers. Therefore, mainly strengthening publicity and education on environmental protection for the public in urban centers is the key to effectively improving the overall awareness of environmental protection of the public in Shanghai.

4. Features of the Changes in Public Environmental Awareness

Establish assessment index system based on the data of the aforesaid survey reports through referring to the assessment index system and weights of Chinese people's livelihood index for environmental protection[6], and change some of the weights according to the marks given by the experts and adopt the comprehensive assessment method to calculate the average values; The calculation formula is as follows: $\bar{s}$ is the average value of the indexes at various levels, and n is the number of the indexes at the following level; Ai is the value of various indexes; Wi is the weighted value of various indexes. M is the number of questions, while Ai is the marks of the single sample. Adopt SPASS for data processing and statistics. See Figure 1 for the results.

$$\bar{s} = \sum_{i=1}^{n} Wi \bullet \bar{Ai} \tag{1}$$

$$\bar{Ai} = \frac{1}{M} \sum_{x=1}^{M} Ax \tag{2}$$

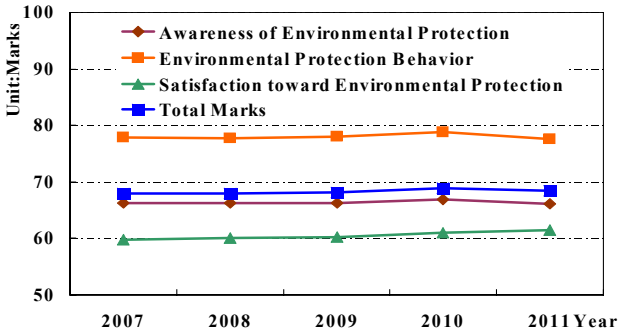

Figure 1 Feature of Changes in Public Environmental Awareness of Shanghai

The changes in the public environmental awareness of Shanghai have shown the following features:

The total level of the public environmental awareness of Shanghai between 2007 and 2011 was 67-68 scores, with the year 2010 and 2007 being the highest and lowest respectively, which shows slightly rising tendency as a whole. It represents insignificant changes in the public environmental awareness of Shanghai in the past 5 years. As shown in the Chinese public environmental protection indexes of 2010, the scores thereof in 2010 was 69.6, remaining stable when compared with 2005(68.1) and 2007(69.1). It is similar to the features of changes in the public environmental awareness of Shanghai in the recent 5 years, and has verified the conclusions of the research to a certain extent.

As for the period from 2007 to 2011, the maximum values of the other three indexes appeared in 2010 except for the maximum value of the satisfaction toward environmental protection in 2011, which shows the public recognition toward the urban environmental regulation and control in recent 2 years. Shanghai implemented “the state IV” emission standards for motor vehicles, and quality standard upgrading for the finished oil in 2010 in advance, which has comprehensively controlled pollution by motor vehicles. Meanwhile, Shanghai has organized and carried out a lot of publicity and educational activities through centering on “low-carbon World Expo”, and has advocated ecological civilization featuring harmonious coexistence between human beings and nature, and has comprehensively improved the awareness of environmental protection among the urban citizens through issuing “Shanghai Declaration”, thus obviously improving the environmental quality and sending the density of atmospheric pollutants such as sulfur dioxide, and nitrogen oxide and PM10 etc. to the lowest level during the past 10 years.

The level of environmental protection behaviors from 2007 to 2011 was relatively the maximum level and the satisfaction toward environmental protection was relatively the lowest marks. It can be seen that environmental protection behaviors are the primary factor for improving the overall level of environmental awareness, and the satisfaction toward environmental protection is an important restrictive factor. The ranks of various elements of environmental awareness vary in the existing research. Wu Zuqiang put forth the ranks as follows in 1995: environmental attitude, environmental knowledge, environmental awareness and environmental behavior; Fan Xiaomei put forth the following ranks in 2006: environmental knowledge, environmental protection behavior, environmental awareness. The ranks in the research are: environmental protection behaviors, awareness of environmental protection, satisfaction toward environmental protection. It can be seen through vertical comparison that the rank of environmental protection behaviors has raised to the first place from the last place over 12 years, while the awareness of environmental protection takes on the features of repeated changes, with obvious improvement in the situation featuring leading awareness and backward behaviors. The recent annual improvement in the environmental conditions of Shanghai has exerted certain influences on individual

behaviors, thus leading to the annual rise in the public environmental protection behavior levels of Shanghai.

The development tendency of the awareness of environmental protection was consistent with that of environmental protection behaviors between 2007 and 2011, with the satisfaction toward environmental protection taking on slightly rising tendency. Some researches hold that sometimes people will change environmental protection behaviors first, and then the awareness of environmental protection will change accordingly. The development tendency of the public awareness of environmental protection was consistent with that of the environmental protection behaviors in Shanghai in the past 5 years, and the environmental protection behaviors levels were higher than those of the awareness of environmental protection. Thus the public awareness of environmental protection of Shanghai changed with the environmental protection behaviors in the past 5 years. Therefore improving the public environmental protection behaviors can effectively enhance the public awareness of environmental protection.

5. Conclusion:

The public environmental awareness of Shanghai took on a slightly rising tendency between 2007 and 2011, and environmental protection behaviors are the leading factor for improving the overall level of environmental awareness, while the satisfaction toward environmental protection is an important restrictive factor. Improving the public environmental protection behaviours can effectively enhance the public awareness of environmental protection.

The public in Shanghai can fully sense the changes in the environmental conditions in Shanghai in the past 5 years, and the public confidence in the environmental conditions mostly comes from the improvement of the urban environment. The residents in the urban centre hold that the air pollution and solid waste pollution are rather serious, while those in the suburb think water pollution and air pollution are relatively more serious, which shows distinct difference from the current environmental conditions of Shanghai.

The public willingness to pay for environmental protection in Shanghai has somehow risen in the past 5 years. The recognition of the suburb residents and female public for the awareness of environmental protection of the surrounding people is always higher than that of the residents in urban centres and male public.

The means of environmental education the public in Shanghai like to accept the most in the past 5 years has changed from news media to activity participation. The means of learning about environmental conditions by the public is TV and radio, and the proportion of the information obtained from newspapers and magazines has decreased, while that of the information on environmental protection from internet has obviously risen, which should be attracting attention.

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